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SOME OBSERVATIONS ON THE FAUNA OF MADEIRA.

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We have in the Library of the Natural History Society but few references to the Fauna of Madeira and the islands lying in its neighborhood; and until the present year, we have had no specimens from the island in our cabinets. I therefore propose to give some of the results of investigation by naturalists who have resided in, or have visited the islands, as well as those lists which are at my command, of the animals in the various departments of Zoölogy.

Perhaps no region distant from the usual route of tourists has been so thoroughly worked up as Madeira, for it has been for many years the resort of invalids, especially from England, and many of these being scientific men, have passed a part of the hours of their compulsory tarry on the island in studying nature; and though our own library is destitute of works on the subject, very many have been written on it, and can be found in the libraries of the Old World.

The situation of the Island of Madeira renders the nature of its fauna; as well as of its flora, somewhat an equivocal one. Being in lat. 32° north of the Equator, it lies between the temperate and tropical regions, and its animals are typical of both; those, in fact, of the countries bordering on the Mediterranean basin, both of Europe and Africa, and of the Canary Islands. Situated, moreover, at a distance of nearly four hundred miles from the African coast, it possesses but few species which are peculiar to the island itself.

Of the *Mammalia* the number of species is very small; with the exception of some bats, none are indigenous. The wild goats and swine mentioned by early voyagers were undoubtedly introduced by vessels; and the same may be said of the rabbit, black and brown rat and mouse, which are now abundant. Seals formerly abounded on the island of Madeira, but are now rarely met with. They are occasionally seen on the neighboring islands. Dr. J. E. Gray, considering the species the type of a new genus, has given it the name *Helio-phaca atlantica*. The British Museum contains specimens of the animal.

Of the birds, but one, a wren (*Regulus maderensis* Harcourt), is peculiar to the island, and this may be found among the laurels and arborescent heaths in the least frequented parts of the island. According to the list of Mr. Harcourt, which is copied below from the Annals and Magazine of Natural History for June, 1855, about thirty

birds are given as breeding in Madeira, and sixty-eight are considered simply as stragglers from the African coast. African and South American birds are frequently brought to the island by ships touching there, and many undoubtedly have escaped and been introduced in this manner.

BIRDS BREEDING IN MADEIRA.

- Falco tinnunculus* Linn. Kestrel.
Falco buteo Linn. Buzzard.
Strix flammea Linn. Barn Owl.
Turdus merula Linn. Blackbird.
Sylvia rubecula Lath. Redbreast.
Sylvia atricapilla Lath. Blackcap.
Curruca Heinekei Jard. Variety of Blackcap.
Curruca conspicillata Gould. Spectacle Warbler.
Regulus maderensis Harcourt. Wren.
Motacilla boarula Linn. Gray Wagtail.
Anthus pratensis Bechst. Meadow Pipit.
Fringilla butyracea Linn. Green Canary.
Fringilla carduelis Linn. Goldfinch.
Fringilla petronia Linn. Ring Sparrow.
Fringilla tintillon Webb and Berth. Buff-breasted Chaffinch.
Fringilla cannabina Linn. Greater Redpoll or Linnet.
Cypselus unicolor Jard. Lesser Swift.
Cypselus murarius Temm. Common Swift.
Columba trocaz Hein. Long-toed Wood Pigeon.
Columba palumbus Linn. Ringdove.
Columba livia Briss. Rock pigeon.
Perdix rubra Briss. Red-legged Partridge.
Perdix coturnix Lath. Quail.
Scolopax rusticola Linn. Woodcock.
Sterna hirundo Linn. Tern.
Larus argentatus Brunn. Herring Gull.
Puffinus major Temm. Cinereous Shearwater.
Puffinus anglorum Temm. Manks Shearwater.
Puffinus obscurus Temm. Dusky Petrel.
Thalassidroma Leachii Temm. Leach's Petrel.
Thalassidroma Bulweri Jard. Bulwer's Petrel.

STRAGGLERS.

- Cathartes percnopterus* Temm. Egyptian Vulture.
Falco nisus Linn. Sparrow Hawk.
Falco subbuteo Linn. Hobby Falcon.
Corvus corax Linn. Raven.
Corvus corone Linn. Carrion Crow.
Oriolus galbula Linn. Golden Oriole.
Sturnus vulgaris Linn. Common Starling.
Turdus iliacus Linn. Redwing.
Turdus musicus Linn. Common Thrush.
Sylvia hortensis Lath. Greater Pettychaps.
Troglodytes europæus Selb. Common Wren.
Motacilla alba Linn. Pied Wagtail.
Alauda arvensis Linn. Skylark.
Fringilla chloris Linn. Greenfinch or Grosbeak.
Fringilla domestica Linn. Common Sparrow.
Cuculus canorus Linn. Cuckow.
Musaphaga africana Temm. African plantain-eater.
Upupa epops Linn. Hoopoe.
Merops apiaster Linn. Bee-eater.
Alcedo ispida Linn. Kingfisher.
Hirundo urbica Linn. House Martin.
Hirundo rustica Linn. Chimney Swallow.
Hirundo riparia Linn. Bank Martin.
Caprimulgus europæus Linn. European Goatsucker.
Columba oenas Linn. Stockdove.
Columba turtur Linn. Turtle dove.
Oedipodius crepitans Temm. Thick knee.
Calidris arenaria Ill. Sanderling.
Vanellus cristatus Meyer. Crested Lapwing.
Charadrius hiaticula Linn. Ringed Plover.
Charadrius pluvialis Linn. Golden Plover.
Streptopus interpres Leach. Turnstone.
Ciconia nigra Temm. Black Stork.
Ardea cinerea Lath. Common Heron.
Ardea ralloides Scop. Squacco Heron.
Ardea russata Wagler. Buff-backed Heron.
Ardea purpurea Linn. Purple Heron.
Ardea minuta Linn. Little Heron or Bittern.
Ardea stellaris Linn. Common Heron.

- Ardea nycticorax* Linn. Night Heron.
Platalea leucorodia Linn. White Spoonbill.
Limosa melanura Leisler. Blacktailed Godwit.
Numenius arquata Lath. Common Curlew.
Numenius phæopus Temm. Whimbrel.
Tringa pugnax Linn. Ruff.
Tringa subarquata Temm. Pigmy Curlew.
Tringa variabilis Meyer. Dunlin.
Tringa cinerea Temm. Knot.
Totanus hypoleucos Temm. Sandpiper.
Totanus glottis Bechst. Greenshank.
Scolopax gallinago Linn. Common snipe.
Scolopax major Temm. Great or Solitary Piper.
Crex Baillonii Temm. Baillon's Crake.
Crex pratensis Selb. Land-rail or Cornerake.
Porphyrio Alleni Gray. Allen's Porphyrio.
Gallinula chloropus Lath. Gallinule or Waterhen.
Fulica atra Linn. Coot.
Anser segetum Steph. Bean Goose.
Mareca Penelope Selb. Widgeon.
Anas crecca Linn. Teal.
Sterna nigra Linn. Black Tern.
Sterna Dougallii Mont. Roseate Tern.
Larus tridactylus Lath. Kittiwake.
Lestris cataractes Temm. Skua.
Colymbus glacialis Linn. Northern Diver.
Sula alba Temm. Gannet or Solan Goose.
Procellaria mollis Gould. White Petrel.
Procellaria pacifica Aud. Pacific Petrel.
Thalassidroma pelagica Temm. Stormy Petrel.
Prion brevirostris Gould. Shortbeaked Petrel.

The *reptiles* of Madeira are very few in number. The gardens and vineyards are overrun by two or three species of small lizards, two of which I noticed to be *Ameiva sexlineata* and *Lacerta Dugesii* M. Edw. At the time of the vintage these little animals do a great amount of injury in the vineyards, of which, assisted by the rats, they are said to destroy nearly one-fifth of the produce, following the ripening fruit up the hills, and making sad havoc among the maturing crops. Several species of turtle are caught in the waters adjoining the island, not unlike those frequently seen by voyagers in this latitude.

The only indigenous fresh water *fish* of Madeira is an eel, of which several species or varieties are found in the streams, up to five hundred feet above the level of the sea. Mr. Lowe, who has given much attention to the ichthyology of Madeira, has enumerated about one hundred and eighty-six species of the marine fishes. He thus speaks of them in one of his papers:—

“The European visitor, on entering the markets, or examining the boats, is struck at once with the almost total absence of the flat fishes, *Salmonidæ* and cod fish tribe, which more especially characterize our stalls in England, and with the unwonted forms of the *Sargus*, *Pagrus*, *Pagellus*, *Box*, *Oblada*, *Smaris*, *Thynnus*, *Prometheus*, *Lichia*, etc.; or with the brilliant hues of the *Serranus*, *Beryx*, *Scarus*, etc.; or the grotesque, deformed *Scorpena* and *Sebastes*. The impression will be somewhat different at different seasons. The spring is characterized by the commoner appearance of the splendid colored *Beryx* in the streets, attracting notice no less by its form and hues of silver, scarlet, rose and purple, than by the extraordinary size and opaline, or rather brassy lustre of its enormous eyes. With this, or even earlier, appears abundantly the common herring of Madeira (*Clupea maderensis*); and, as the season advances, the mackerel (*Scomber scombeus* L.); the scarlet Peixeirão, or dog fish of Madeira, (*Crenilabrus caninus*); carneiro or mutton fish (*Scorpena scorpa* L.) and Requieme (*Sebastes Kuhlîi*); the pike-like Bicuda or Spet of the Mediterranean (*Sphyræna vulgaris*); the Sargo (*Sargus Rondeletii* Cuv. and Val.) with teeth resembling the human; and the plain colored Dobrada (*Oblada melanura* Cuv.). The herring and the Alfonsin (*Beryx splendens*) attain the climax of their season about March or April; the mackerel in May and June; but the whole, except the herring, continue throughout most part of the summer and autumn. In May the magnificent *Lampris louta*, the beauty of which in the water excites the admiration even of the fisherman, begins to make its occasional appearance in the market; and, what is of far more importance in an economical point of view, the tunny fishery begins. This last is at its greatest height in June or July; and to it succeeds the capture of the Gaiado (*Thynnus Pelamys* L.), which is pursued with such success that I have sometimes watched a single boat, furnished with scarce half a dozen rods, pulling them at the rate of four or five a minute. With the Gaiado appears, in almost equal plenty, the Cœlho or rabbit-fish (*Prometheus atlanticus*); and these continue till the close of summer by the equinoctial rains of October. The winter

months of January and February are chiefly characterized by the presence, close along the shores, of the little Guelro (*Atherina presbyter* Cuv.), or sand smelt of Madeira, of the common Madeiran herring (*Clupea maderensis*) and Sardinha (*Clupea sardina* Cuv.); the last two being captured principally after violent gales and storms, when the swollen rivers or torrents carry down much mud into the sea."

"The following species occur in great profusion, more or less, throughout the year, but still most plentifully in spring and summer, viz.; Garoupa (*Serranus cabrilla* Cuv.); Cherne (*Polyprion cernium* Cuv. and Val.); Goraz (*Pagellus centrodontus* Cuv.); Bezugo (*Pagellus acarue* Cuv.); Pargo (*Pargus vulgaris* Cuv.); Boga (*Box vulgaris* Cuv.); Bocairaõ (*Smaris Royeri* Bowd.); Ranhosaor Tronbeta (*Lichia glaycos* Cuv.); Chicharro or Madeiran horse mackerel (*Caranx Cuvieri*); Bodiaõ (*Scarus mutabilis*); and Abrodea (*Phycis mediterraneus* Lar.). The well known John Dory or Peixe Gallo (*Zeus faber* L.), and delicate Red Mullet or Salmoneta (*Mullus surmuletus* L.), are also taken at all seasons, but more sparingly. The gray mullet or Tainha is captured very plentifully throughout the year, but most abundantly perhaps in June."

Of the *insects*, eleven hundred and eighty-six species are found in Madeira. A synopsis of the different genera, as given by Mr. T. Vernon Wollaston in his notes, and copied by Mr. White in his handbook, is inserted below. Only the Coleoptera, however, have been thoroughly investigated. In the elaborate work of Mr. Wollaston, entitled "*Insecta Maderensia*," he describes four hundred and eighty-three species of beetles; since the publication of his work, seventy-two new species have been added, raising the entire number discovered to five hundred and fifty-five species. Under twelve primary sections into which he divides the beetles, are found the following number of species:—Rhyncophora, 111; Brachelytra, 95; Necrophaga, 94; Geodephaga, 66; Heteromera, 46; Priocerata, 40; Cordylocerata, 45; Phytophaga, 23; Pseudotrimeria, 22; Philhydrida, 16; Eucerata, 9; Hydradephaga, 8.

Other interesting data regarding the Coleoptera are thus given by Mr. White: "The type of this section of the Madeiran fauna is in the main Mediterranean; and it is thought to have a greater affinity to the fauna of Sicily than that of any other country which has been hitherto investigated. A slight connection with the beetles of Ireland can be traced. One of the striking features of the Coleopterous fauna of Madeira is the absence of numerous genera, and even of whole

families, which are looked upon as almost universally distributed. Other remarkable features are that the wood and water beetles are few, and that the flower infesting tribes are very scarce. As a rule, the beetles of Madeira are obscurely colored, gay tints being rarely seen. Of the more conspicuous ones the following species are abundant beneath stones in Madeira:—*Scarites abbreviatus*, *Calosoma maderæ*, *Calathus complanatus*, *Harpalus vividus*, *Loparocerus morio* and *Hadrus cihherascens*. In Porto Santo and Deserta Grande, the large *Eurygnathus Latreillei* is found under similar circumstances. *Colymbetes lanius* is common in the streams of intermediate and lofty elevations. In certain districts a bright green *Dasytes* (*Dasytes illustris*), the beautiful *Stenaxis Loweii* and the *Zonitis quadripunctata* are abundant on flowers. The laurels on the mountains are infested by *Atlantis lamellipes*, *Atlantis noctivagans*, *Blabinotus spinicollis* and *Trichoferus senex*. Cavernous hollows in the basalt and tufa of the lower regions are inhabited by *Blaps gages*, *Blaps fatadica*, *Hegeter elongatus*, and several species of *Helops*; whilst the great *Stromatium unicolor* is too well known in the houses of Funchal from the destruction its larva causes to the furniture, on which it chiefly subsists." Mr. Wollaston has presented a fine series of type specimens of the Madeira insects to the British Museum, where they may be seen.

The remaining orders of Madeiran insects have been less fully, and none of them exhaustively studied. A very troublesome little ant abounds in the houses of Madeira, and is supposed to be peculiar to the island. It has received the name *Ecophthora pusilla* from Prof. Heer, who has written an account of this little animal, a translation of which can be found in the Annals and Magazine of Natural History for March and April, 1856. "This ant swarms on the south side of the island up to the height of one thousand feet, living in societies composed of four classes, namely, laborers, soldiers, males and females. The soldiers have remarkably large heads, and the females are winged. The societies live in the ground, under stones, under the bark of trees, and within houses, always preferring a dry, warm locality. In Funchal there is hardly a house which does not harbor millions of these creatures, which climb to the highest story, issue in troops out of the smallest crack of the floor, and march in orderly columns to any point which attracts them. They are most abundant in the dry summer months; after continued wet weather their numbers are perceptibly less. Among the *Arachnida*, or spiders, there are many beautiful varieties. One, the *Lycosa* (*Tarantuloides*) *maderiana* Walckn., is reputed to be poisonous. The miting

spider is quite common among the gardens of Funchal. Two or three species of *Myriapoda* are very common, even infesting the houses.

The freshwater and marine *shells* have been pretty thoroughly studied, especially by Mr. Lowe, Mr. Watson, the resident clergyman of the Scotch Church in Funchal, and by the Barone de Paiva, who has recently published a comprehensive treatise on the Mollusca of the Islands of the Madeiran Group. Of the land and fresh water shells Mr. Lowe enumerates one hundred and fifty-five species; Mr. Wollaston reduces the number of true species to one hundred and thirty-two, of which one hundred and eleven are peculiar to the Madeiras; five are common to the Canaries; four to the Azores; one to the Guinea Coast; and eleven to the south of Europe. Of the whole number, seventy-six species belong to the genus *Helix*, and twenty-three to the genus *Pupa*.¹

The marine shells have been less carefully studied. Mr. McAndrews gives a list of one hundred and fifty-six species of marine testaceous mollusca which he obtained whilst dredging for a few days off the coast of Madeira. The genera most largely represented are *Tellina*, *Cardium*, *Lucina*, *Pecten*, *Hyalæa*, *Patella*, *Trochus*, *Rissoa*, *Murex*, *Mangelia* and *Mitra*. The boldness of the shore and the nature of the bottom render dredging somewhat difficult; there are, however, situations where it can be successfully performed, and it is from these few points only that the specimens have been obtained.

Appended to this article is given a

LIST OF BOOKS AND ARTICLES ON THE FAUNA, FLORA AND GEOLOGY OF
MADEIRA AND THE ADJACENT ISLANDS.

BOWDICH (T. E.). Excursions in Madeira and Porto Santo. 4to. London, 1825.

DANA (J. D.). United States Exploring Expedition. Vol. X. 4to. Philadelphia, 1829.

DARWIN (C.). In his Monograph on the Cirripedia. 8vo. London, 1851.

GOURLAY (W.). Natural History of Madeira. 8vo. London, 1811.

HARCOURT (E. V.). Notice of the Birds of Madeira. Proceedings

¹ Of the Madeiran land shells now in the cabinet of the Society, a large number were given to the writer by Mrs. Scott of New York, for some months a resident of the island. Mr. Watson possesses a beautiful and choice collection of the land and fresh water shells; and so does also Sr. J. M. Moniz, a Portuguese gentleman in the employ of the Government. Mr. Moniz often has collections of the shells, as well as the ferns and other objects of natural history of the island, for sale.

- of the Zoölogical Society of London for 1851. *Annals and Magazine of Natural History* for July, 1853.
- HARCOURT (E. V.). List of the Birds of Madeira. *Annals and Magazine of Natural History*, June, 1855.
- Sketch of Madeira. 8vo. London, 1851.
- Piscium Maderensium species quædam novæ, etc. *Transactions of the Cambridge Philosophical Society* for 1836.
- LOWE (R. T.). *Primitiæ et Novitiæ Faunæ et Floræ Madeiræ et Portus Sancti*. 4to. Cantabrigiæ, 1851.
- Synopsis of the Fishes of Madeira. *Trans. Zoöl. Soc. of London*, II, 173, for 1841.
- Supplements to same. *Ibid.*, III, 1, 1849. *Proceedings of the Zoölogical Society of London*, Vols. VII, VIII, XI and XIV.
- Notices of Fishes newly observed or discovered in Madeira during 1840, '41 and '42. *Annals and Magazine of Natural History*, 1st Ser., XIII, 390, 1844.
- An account of Fishes discovered or observed in Madeira since 1842. *Ibid.*, 2d Ser., X, 49, 1852.
- *Catalogus Molluscorum Pnëumatorum Insularum Maderensium*. *Proceedings of Zoölogical Society of London* for 1854.
- Various smaller papers in the *Zoölogical Journal*, *Annals of Natural History* and *Proceedings of the Zoölogical Society of London*.
- LYELL (SIR C.). On the Geology of some parts of Madeira. *Quarterly Journal Geol. Soc. Lond.*, August, 1854.
- A Manual of Elementary Geology. Ch. XXIX.
- MASON (J. A.). A Treatise on the Climate and Meteorology of Madeira, etc. 8vo. London, 1850.
- MCANDREW (R.). On the Geographical Distribution of Testaceous Mollusca in the North Atlantic and Neighboring Seas. 1854.
- BARONE DE PAIVA. *Monographia Molluscorum Terrestrium, Fluvialum, Lacustrum Insularum Maderensium*. 4to. Lisbon.
- SMITH (J.). On the Geology of Madeira. *Proceedings Geol. Soc. Lond.*, III, 351, 1840-41.
- WHITE (R.). Madeira, its Climate and Scenery. 2d Ed. 8vo. Edinburgh, 1857.
- WOLLASTON (S. V.). *Insecta Maderensia*, being an account of the insects of the islands of the Madeiran Group. 4to. London, 1854.

WOLLASTON (S. V.). Notes on the Entomology of Madeira, in the Annals and Magazine of Natural History for 1858, 1859 and 1860.

——— On the Variation of Species. pp. 127–132. 8vo. London, 1856.

——— Catalogue of the Coleopterous insects of Madeira in the collection of the British Museum. 8vo. London, 1857.

WOODWARD (S. P.). Manual of the Mollusca. pp. 386–7. 12mo. London, 1854.